AMENDMENTS TO THE CLAIMS:

For convenience, the claims are listed, although not amended.

LISTING OF THE CLAIMS

1. (original) A sensing apparatus useful for inspecting the structural integrity of visibly clear objects, the apparatus comprising:

a sensor device operative to respond to electromagnetic radiation at one or more wavelengths or wavelength ranges corresponding to electromagnetic energy transmission wherein the objects are rendered opaque by naturally occurring molecular and/or atomic absorptions occurring within material comprising the objects;

an electromagnetic radiation source wherein a significant portion of an emitted spectrum therefrom occurs in the ranges wherein the objects are generally opaque; and,

a support structure positioned to support the sensor device and source and to maintain the objects in between the source and the sensor device.

2. (original) The apparatus of claim 1 wherein the sensor device is comprised of a single-element photoconductive, photovoltaic, or thermal detector.

3. (original) The apparatus of claim 2 further comprising a processor operative to receive an output of the sensor device and operate on the output to determine the state, quality, or acceptability of the objects.

4. (original) The apparatus of claim 3 further comprising part detection,

tracking, and conveyance systems deployed to interact with the objects and used to both maneuver the object under test into an advantageous position between the sensor element and the source and to provide instrument control signals to both the sensor device and the source.

5. (original) The apparatus of claim 4 further comprising a reject system which receives the processed output of the processor and acts to physically reject or otherwise mark for subsequent action objects.

6. (original) The apparatus of claim 5 wherein the source comprises a black or gray body thermal emitter.

7. (original) The apparatus of claim 6 wherein the source is amplitude modulated by a mechanical chopping system in order to increase a signal to noise ratio of a subsequently received electromagnetic signal.

8. (original) The apparatus of claim 5 wherein the source comprises a semiconductor LED type emitter or array of emitters.

9. (original) The apparatus of claim 8 wherein the source is pulsed in order to increase a signal to noise ratio of a subsequently received electromagnetic signal.

10. (original) The apparatus of claim 1 wherein the sensor device is comprised of a one or two-dimensional array of photosensitive elements.

11. (original) The apparatus of claim 10 further comprising a processor which

receives the output of the sensor device and operates on the output to determine the state, quality, or acceptability of the objects.

12. (original) The apparatus of claim 11 further comprising part detection, tracking, and conveyance systems deployed to interact with the objects and used to both maneuver the object under test into an advantageous position between the sensor device and source and to provide instrument control signals to both the sensor device and source.

13. (original) The apparatus of claim 12 further comprising a reject system which receives the processed output of the processor and acts to physically reject or otherwise mark for subsequent action objects.

14. (original) The apparatus of claim 13 wherein the source comprises a black or gray body thermal emitter.

15. (original) The apparatus of claim 14 wherein the source is amplitude modulated by a mechanical chopping system in order to increase a signal to noise ratio of a subsequently received electromagnetic signal.

16. (original) The apparatus of claim 15 wherein the source comprises a semiconductor LED type emitter or array of emitters.

17. (original) The apparatus of claim 16 wherein the source is pulsed in order to increase a signal to noise ratio of a subsequently received electromagnetic signal.

18. (original) A sensing method wherein visibly clear objects are inspected for structural integrity, the method comprising steps of:

placing a visibly clear object under test disposed in between a sensor device and a source of electromagnetic radiation;

generating electromagnetic radiation in wavelength ranges such that the objects are substantially opaque due to naturally occurring molecular or atomic absorptions occurring in material comprising the objects, the ranges corresponding to both the opaque wavelength regions of the objects and sensitivity regions of the sensing device;

sensing with the sensor device the electromagnetic radiation at the wavelengths which correspond to the opaque wavelength regions of the objects under test; and,

determining a state, quality, or acceptability of the objects based on an output of the sensor device.

19. (original) The method of claim 18 wherein the sensing comprises using a single-element photoconductive, photovoltaic, or thermal detector.

20. (original) The method of claim 19 further comprising using processing means to receive output of the sensor device and to operate on the output to determine a state, quality, or acceptability of the objects.

21. (original) The method of claim 20 further comprising using part detection, tracking, and conveyance systems deployed to interact with the objects and useful to both maneuver the objects into an advantageous position between the sensor device and a source of the electromagnetic radiation and to provide instrument

control signals to both the sensor device and the source.

22. (original) The method of claim 21 further comprising using a reject system to receive processed output of the processing means and to physically reject or otherwise mark objects.

23. (original) The method of claim 22 wherein the generating comprising using a black or gray body thermal emitter.

24. (original) The method of claim 23 wherein the generating comprises amplitude modulating the radiation by a mechanical chopping system in order to increase a signal to noise ratio of a subsequently received electromagnetic signal.

25. (original) The method of claim 22 wherein the generating comprises using a semiconductor LED type emitter or array of emitters.

26. (original) The method of claim 25 further comprising pulsing the source in order to increase a signal to noise ratio of a subsequently received electromagnetic signal.

27. (original) The method of claim 18 wherein the sensing comprising using a one or two-dimensional array of photosensitive elements.

28. (original) The method of claim 27 further comprising using processing means to receive the output of the sensor device and to operate on the output to determine a state, quality, or acceptability of the objects.

29. (original) The method of claim 28 further comprising using part detection, tracking, and conveyance means deployed to interact with the objects and useful to both maneuver the objects into an advantageous position between the sensor device and a source of electromagnetic radiation and to provide instrument control signals to both the sensor device and the source.

30. (original) The method of claim 29 further comprising using a reject system to receive processed output of the processing means and to physically reject or otherwise mark objects.

31. (original) The method of claim 30 wherein the generating comprises using a black or gray body thermal emitter.

32. (original) The method of claim 31 wherein the generating comprises using a mechanical chopping system to amplitude modulate in order to increase a signal to noise ratio of a subsequently received electromagnetic signal.

33. (original) The method of claim 32 wherein the generating comprises using a semiconductor LED type emitter or array of emitters.

34. (original) The method of claim 33 wherein the generating comprises pulsing to increase a signal to noise ratio of a subsequently received electromagnetic signal.